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AMERICAN SPECIES OF THE PSEUDOSCORPION  
GENUS *MICROBISIUM* CHAMBERLIN, 1930

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GENUS *MICROBISIUM* CHAMBERLIN, 1930

C. CLAYTON HOFF\*

For several years there has been considerable confusion regarding the American species of the genus *Microbisium* Chamberlin, 1930. As a result of intensive work on the part of Dr. J. C. Chamberlin and the writer, it is now possible to clarify the status of members of this genus. Since it appears very improbable that a monographic account of the group can be published in the near future, the present note will serve to correct certain errors in the literature and to furnish a brief diagnosis of *Microbisium confusum*, new species. A considerable part of the data employed here has been furnished by Dr. Chamberlin who has kindly consented to its inclusion. The writer is indebted to Dr. J. C. Bequaert of the Museum of Comparative Zoology for the privilege of examining the type specimens of both *Microbisium brunneum* (Hagen, 1869) and *Microbisium parvulum* (Banks, 1895).

The confusion and misunderstanding relative to the three American species of *Microbisium* result chiefly from the inadequate original descriptions of the *Obisium brunneum* of Hagen and the *Obisium parvulum* of Banks. Also contributing to the confusion has been the uncertainty regarding the type locality of *M. parvulum* and the apparent inclusion of a specimen of *brunneum* in the type lot of *parvulum*. In addition, Hoff (1944) reported the two species of *Microbisium* in Illinois as a single species. The data used by Hoff were based on examination of about 200 individuals selected supposedly at random from widely scattered areas in Illinois. More recently, Dr. Chamberlin examined a single collection of 227 adult specimens of *Microbisium* in a collection belonging to the

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Illinois State Natural History Survey and collected from sphagnum moss in a tamarack bog near Antioch, Illinois, on October 27, 1943, by Drs. H. H. Ross and M. W. Sanderson. A detailed study of this collection showed that there were really two well-defined species of *Microbisium* present. When first examined, it was thought that the two species were *brunneum* and *parvulum*, but comparison with the cotypes indicated that the species are really *brunneum* and an undescribed species. The latter is described here as *M. confusum*, new species.

It is impossible to give a complete synonymy of the American species of *Microbisium* until reexamination has been made of the specimens upon which the records are based.

### *Microbisium brunneum* (Hagen, 1869) Chamberlin, 1930

*Obisium brunneum* Hagen, 1869, p. 52.

*Obisium brunneum* Hagen, Banks, 1895, p. 12.

*Microbisium brunneum* (Hagen), J. C. Chamberlin, 1930, p. 20.

*Microbisium brunneum* (Hagen) (in part), Hoff, 1944, p. 125-128.

While working on the species of *Microbisium*, the writer examined the two cotypes deposited under the name *Obisium brunneum* in the Museum of Comparative Zoology. One individual has been designated as the lectotype; the other individual is recorded herein as the cotype. The lectotype consists of the body, one attached palp with the chela removed, and one palp removed from the animal. The body length is 1.5 mm. The palpal measurements for the lectotype are as follows (L = length; W = width) :

	Attached palp and loose chela	Loose palp
Trochanter, L x W	0.27 x 0.165 mm.	0.28 x 0.16 mm.
Femur, L x W	0.515 x 0.163 mm.	0.52 x 0.16 mm.
Tibia, L x W	0.42 x 0.21 mm.	0.42 x 0.21 mm.
Chela, L x W	0.88 x 0.29 mm.	0.88 x 0.29 mm.
Movable finger, L	0.48 mm.	0.49 mm.

The cotype consists of the body and one palp, the other palp being lost. The body length is 1.3 mm. The palpal trochanter is 0.255 mm. long, 0.15 mm. wide; the femur 0.47 mm. long, 0.15 mm. wide; the tibia 0.38 mm. long, 0.19 mm. wide; the chela is 0.79 mm. long, 0.265 mm. wide; the movable finger has a length of 0.45 mm.

Dr. Chamberlin has allowed the writer to use the following data pertinent to 100 specimens of *M. brunneum* in the large Illinois collection to which reference was given in the introduction. Measurements

of these specimens show that the mean length (specimen must be properly oriented) of the papal femur is  $0.477 \pm 0.003$  (S. E.) mm., with a standard deviation of 0.0296 mm., and with a range roughly between 0.4 and 0.56 mm. The range of the length/width ratio of the papal femur is from 2.95 to 3.07; the total number of teeth present on the two chelal fingers ranges from 79 to 85. Chamberlin indicates slightly greater ranges for these statistics when specimens from other areas are included in the sample.

*Microbisium brunneum* appears to have a wide geographical range in eastern Canada and in the northern United States from New York to Illinois. In Illinois, the form occurs in great numbers in the tamarack bogs of the northern part of the state.

### *Microbisium parvulum* (Banks, 1895) Chamberlin, 1930

*Obisium parvulum* Banks, 1895, p. 12.

*Microbisium parvulum* (Banks) (in part); Chamberlin, 1930, p. 21-22

Except for the two cotypes deposited at the Museum of Comparative Zoology, the writer has not had an opportunity to examine specimens of this species. One of the cotypes, designated as the lectotype, has one palp attached to the body and the other palp removed. The slightly contracted body measures about 1.05 mm. Other measurements of the lectotype are as follows:

	Attached palp	Removed palp
Trochanter, L x W	0.23 x 0.13 mm.	not secured
Femur, L x W	0.42 x 0.145 mm.	0.43 x 0.15 mm.
Tibia, L x W	0.33 x 0.18 mm.	0.34 x 0.18 mm.
Chela, L x W	0.70 x 0.255 mm.	0.68 x 0.26 mm.
Movable finger, L	0.39 mm.	about 0.38 mm.

The second specimen, the cotype, has a slightly contracted body measuring 0.9 mm. in length. Other available measurements follow:

	Intact but loose palp	Broken palp
Femur, L x W	0.41 x 0.14 mm.	not available
Tibia, L x W	0.32 x 0.16 mm.	not available
Chela, L x W	0.65 x 0.235 mm.	0.65 x 0.24 mm.
Moveable finger, L	0.37 mm.	0.38 mm.

*Microbisium parvulum* may be separated from the new species, *M. confusum*, by a longer palpal femur and from *M. brunneum* by a slightly stouter palpal femur. *Microbisium parvulum* appears to have a range in

the southwestern part of the United States. Very probably the type locality is not Florida, as questionably given by Banks (1895), but Texas or Arizona. The species has not been found in Illinois.

*Microbisium confusum*, new species

*Microbisium brunneum* (Hagen) (in part), Hoff, 1944, p. 125-128.

In lieu of a complete description, it seems advisable at this time to give certain diagnostic characteristics that will make possible the recognition of this species. Through a study of 127 adult individuals from the Illinois collection mentioned in the introduction, Dr. Chamberlin secured the following measurements and counts: total length of palp, including the trochanter, femur, tibia, and chela (pedicle included), between 1.328 and 1.623 mm.; palpal femur with a mean of  $0.357 \pm 0.0019$  (S. E.) mm., a standard deviation of 0.022 mm., and a range roughly between 0.275 and 0.395 mm.; femur with a length/width ratio between 2.61 and 2.84; total marginal teeth on both chelal fingers between 63 and 72, with a count as high as 78 teeth in specimens from other areas.

Type locality: Antioch, Illinois (collection mentioned above).

*Microbisium confusum* is easily confused with *M. brunneum* since, in some characteristics, the two species show a slight overlapping. In general, most specimens of *M. confusum* when compared with specimens of *M. brunneum* are found to have a smaller body; the palps are smaller, less sclerotic, less deeply colored, and less polished; the palpal femur is conspicuously smaller and stouter; the pedicle of the tibia is commonly less slender and the inner margin of the palpal tibia is usually more evenly rounded or convex; and the chelal fingers appear stouter when viewed from the dorsad. The most reliable character for separation of the two species is the length of the palpal femur, which is always less than 0.4 mm. long in *confusum* and more than 0.4 mm. long in *brunneum*. In addition, there is little overlapping in the length/width ratio of the palpal femur. This ratio in *confusum* is between 2.42 and 2.89 while the ratio in *brunneum* is between 2.87 and 3.2.

Methods of separating *confusum* and *parvulum* are not so readily available. Dr. Chamberlin eventually will publish methods for the separation of these two forms but this seems too detailed for the present review. Measurements of the palpal femur of the lectotype and cotype of *M. parvulum* indicate, however, that a separation of most individuals of these two species, *parvulum* and *confusum*, may be made on the greater length of the femur in *parvulum*.

*Microbisium confusum* appears to be the common species of the genus in the Mississippi River valley and the eastern part of the United States. In Illinois it is abundant everywhere in forest soil and debris. It is commonly found in association with *M. brunneum* in the sphagnum moss of tamarack bogs of northern Illinois.

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